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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/687,431
Filing Date: October 16, 2003
Appellant(s): SCHROEDER ET AL.

Thomas F. Woods
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 2/8/08 appealing from the Office action mailed 8/10/07.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,794,384	Jackson	12-1988
4,751,380	Victor et al	06-1988

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 21-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson (US 4,794,384) in view of Victor et al (US 4,751,380 hereinafter Victor).

As to claim 34, Figs. 1 and 2 of Jackson discloses a device for determining a first distance along a movement path on a surface (14) over which an optical tracking device (optical mouse 20) is moved by a user, comprising:

a coherent light source (12) configured to project a first coherent light beam along the movement path and onto the surface as an incident light beam, the coherent light source (12) being configured in respect of the surface to produce a plurality of light interference speckles resulting from the first light beam and a second light representing at least portions of the first light beam reflected form the surface interfering with one another (col. 2, lines 38-44, col. 3, lines 6-12 for example), the speckles having a first average spatial dimension (col. 5, lines 15-17);

a plurality of light sensors (detector array 16) operatively associated with the coherent light source and a processor (control means, Figs. 3), each of plurality of light sensors having a second spatial dimension that is less than the first average spatial dimension of the speckles (col. 4, line 62 to col. 5, line 17 for example).

Jackson does not disclose the plurality of light sensor arranged in a sensor cluster, each of the light sensor further being configured to generate a first signal when one of the plurality of speckles is detected thereby and to generate a second signal when one of the plurality of speckles is not detected thereby, and the processor configured to determine the first distance on the basis

of the plurality of first and second signals generated by the plurality of light sensors as the device is moved over the surface. However, Victor is cited to teach an optical mouse similar to Jackson. Victor teaches the optical mouse having a plurality of light sensor arranged in a sensor cluster (three-by-three detector array 35 in Fig. 3), each of the light sensor (detector cells A-G) further being configured to generate a first signal (one state) when the reflected light from a space is detected thereby and to generate a second signal (zero state) when the reflected light from a space is not detected thereby (see Figs. 4-6, and col. 7, line 51 to col. 8, line 41 for example), and the processor (Fig. 5) configured to determine the first distance (cursor movement) on the basis of the plurality of first and second signals generated by the plurality of light sensors as the device is moved over the surface. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the optical device of Jackson to have the light sensors arranged in a sensor cluster and the processor as taught by Victor so as to provide a compact optical mouse due to the use of a three-by-three detector array, and the system reliably determines relative motion between the mouse and the surface (col. 8, line 55-67 of Victor).

As to claims 35, 36, Victor teaches the processor is configured to determine the direction, first distance and a first direction based on the plurality of first and second signals generated by the plurality of the light sensor as the device is moved over the surface (Figs. 4-6 of Victor).

As to claims 37, 38, Jackson teaches the processor is configured to determine at least one characteristic of the speckles (col. 4, line 63 to col. 5, line 38).

As to claim 39, Fig. 2 of Jackson teaches the coherent light source and the sensors are configured such that the first average spatial dimension of the speckles is predicted with a high degree of confidence.

As to claim 40, Jack teaches the average speckle dimension is given approximately by the equation (col. 5, lines 1-17).

As to claim 41, Jackson teaches counting the number of speckles along the optical path to determine the first distance (Fig. 4, col. 8, line 58 to col. 9, line 21).

As to claim 42, Jackson as modified by Victor does not disclose the first average speckle dimension of the speckles is selected from the group consisting of about 10 microns and ranging between about 50 and about 100 microns, or is approximately. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Jackson as modified by Victor to have the first average speckle dimension as claimed, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272,205 USPQ 215 (CCPA 1980).

As to claim 43, Victor teaches the plurality of light sensors comprises at least five light sensors.

As to claims 44, 45, Figs. 6 of Victor teaches the first signal is a high signal (one state) and the second signal is a low signal (zero state), or the first signal is a low signal (one state) and the second signal is a high signal (zero state),

As to claims 46, 47, Fig. 6 of Victor teaches to detect the leading edges and the trailing edges of the fist and second signals.

As to claim 48, Jackson as modified by Victor does not disclose the first average spatial dimension of the speckles is at least twice that of the second spatial dimensional of the sensors. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Jackson as modified by Victor to have the first

average speckle dimension as claimed, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272,205 USPQ 215 (CCPA 1980).

As to claim 49, Jackson teaches the device is a mouse.

Claims 21-33, 50, which are method claims corresponding to the above apparatus claims 34-49, are rejected for the same reasons as stated above since such method "steps" are clearly read on by the corresponding "means".

(10) Response to Argument

Appellant's argument (1st paragraph on page 38 of the brief) in that "Nowhere does the Jackson reference discloses, discuss, hint at or suggest sensing the rising and falling edges of light speckles using relatively small areal arrays of photosensors or photodetectors, and then, in a processor, comparing such rising and falling edges, and the high and low states that lie between such rising and falling edges, as a means of determining direction and magnitude of movement of a mouse over a surface" are not persuasive. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Appellant's arguments in that "Jackson discloses none of, nor hints at or suggests any of, elements (d), (f), (h) or (i), or their similar method equivalents, as they are recited in claims 21-50" (2nd paragraph on page 38 of the brief, 1st paragraph on page 47 of the brief, page 47, last paragraph to page 48, 3rd paragraph of the brief) and "Victor et al. discloses none of, nor hint at or suggest any of, elements (c), (d), (f), (g), (h) or (i), or their similar method equivalents, as they are recited in claims 21-50" (3rd paragraph on page 44 of the brief, 2nd paragraph on page 47 of

the brief, page 47, last paragraph to page 48, 3rd paragraph of the brief) are not persuasive since appellant is attacking references individually. In response to appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

As discussed in the rejection above, Jackson on col. 2, lines 38-4 discloses:

"The device comprises a light source for providing at least partially coherent radiation and the source radiation is directed toward an area of the surface area, the reflected coherent radiation or light at the surface area undergoes optical interference due to the texture of the surface thereby forming a speckle pattern consisting of light and dark features",

which clearly reads on "the coherent light source being configured in respect of the surface to produce a plurality of the light interference speckles resulting from the first light beam and a second light representing at least portions of the first light beam reflected form the surface interfering with one another (element (c)) as claimed.

Jackson also on col. 4, line 62 to col. 5, line 17 discloses:

"The relationship of the size of the speckle features and their contrast ratio relative to the size of the detector cells in the array 16 depends upon several factors including the roughness or minute irregularity of surface 14 and the extent of coherence of source 12. The speckle pattern features are larger than the size of the individual detector cells. Minimum speckle size at detector array 16 is determined by the formula: $\alpha = 2\lambda Z/d$ where α is the minimum speckle size, λ is the wavelength of coherent light of source t2, Z is the distance from reflecting surface 14 to detector array 16 and d is the diameter of the illuminated spot at surface 14. Speckle size should be sufficiently large so as to provide a detectable speckle pattern within the framework of the dimensions of the detector array 16, Required minimum speckle feature size can be accomplished by making the size of the illuminated spot on surface 14 smaller or by making the distance Z larger. The average speckle feature size is generally a little larger than this minimum value".

The cited section clearly discloses "the speckles having a first average spatial dimension" (element (d)) and "each of the plurality of light sensors having a second spatial dimension that is less than the first average spatial dimension of the speckles" (element (f)) as claimed.

Victor is cited to teach the optical mouse having a plurality of light sensor arranged in a 3 x 3 sensor cluster, each of the light sensors (cells A-G) is configured to generate a "one state" signal when one of the sensors detects the reflected light by moving the mouse from a grid line to a space, and to generate a "zero state" signal when one of the sensors detects the reflected light by moving mouse from a space to a grid line, and the processor (Fig. 5) configured to determine the cursor movement based on the first and second signals generated by the light sensors as the device is moved over the surface line (col. 7, line 51 to col. 8, line 41 and Figs. 4-6). Therefore, Jackson as modified by Victor would have "a plurality of light sensors arranged in a sensor cluster" (element (e)), "each of the light sensors further being configured to generate a first signal when one of the plurality of speckles is detected thereby" (element (g)), and "to generate a second signal when one of the plurality of speckles is not detected thereby" (element (h)) and "a processor configured to determine the first distance on the basis of the plurality of first and second signals generated by the plurality of light sensors as the devices is moved over the surface" (element (i)) as claimed.

Therefore, appellant's arguments in that "Jackson discloses none of, nor hints at or suggests any of, elements (d), (f), (h) or (i), or their similar method equivalents, as they are recited in claims 21-50" and "Victor et al. discloses none of, nor hint at or suggest any of, elements (c), (d), (f), (g), (h) or (i), or their similar method equivalents, as they are recited in claims 21-50" are not persuasive for the reason stated above.

Again, appellant's remarks (on the last paragraph on page 43 and second paragraph on page 44 of the brief) are not persuasive since appellant is attacking references individually. In response to appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to appellants argument (last two paragraphs on page 49 of the brief) that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Victor teaches to provide a compact optical mouse due to the use of a three-by-three detector array, and the system reliably determines relative motion between the mouse and the surface (col. 8, lines 55-66). Therefore, contrary to appellant's allegations, the examiner has set forth a reason to combine the references and establishes a prima facie case of obviousness.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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